

CLAIMS

1. A plating method comprising:
applying an ultraviolet ray to a surface of a substrate; and
5 plating the surface of the substrate after said applying process.

2. The plating method as recited in claim 1, further comprising bringing the
surface of the substrate into contact with an acid liquid after said applying process
before said plating process.

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3. The plating method as recited in claim 1, wherein said applying process
comprises emitting the ultraviolet ray from at least one of an UV lamp, a
low-pressure mercury lamp, an ArF excimer laser, and an excimer lamp with a
dielectric barrier discharge.

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4. A plating method comprising:
exposing a surface of a substrate to an ozone gas; and
plating the surface of the substrate after said exposing process.

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5. The plating method as recited in claim 4, further comprising bringing the
surface of the substrate into contact with an acid liquid after said exposing process
before said plating process.

6. The plating method as recited in claim 4, wherein the ozone gas includes
25 ozone at a volume fraction of at least 10 %.

7. A plating method comprising:
bringing a surface of a substrate into contact with ozone water; and
plating the surface of the substrate after said bringing process.

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8. The plating method as recited in claim 7, further comprising bringing the
surface of the substrate into contact with an acid liquid after said bringing process
with the ozone water before said plating process.

9. The plating method as recited in claim 7, further comprising dissolving an ozone gas in pure water by diffusion and dissolution through an ozone dissolution membrane to generate the ozone water.

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10. A plating method comprising:
bringing a surface of a substrate into contact with electrolytic ionized water; and
plating the surface of the substrate after said bringing process.

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11. The plating method as recited in claim 10, further comprising bringing the surface of the substrate into contact with an acid liquid after said bringing process with the electrolytic ionized water before said plating process.

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12. The plating method as recited in claim 10, wherein the electrolytic ionized water comprises at least one of anodic water and cathodic water generated by electrolysis of a solution containing at least one of pure water and an electrolyte.

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13. A plating method comprising:
plating a surface of a substrate with an acidic plating solution;
cleaning the surface of the substrate with pure water after said plating process; and
cleaning the surface of the substrate with an alkalescent aqueous solution after said plating process.

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14. The plating method as recited in claim 13, wherein the alkalescent aqueous solution comprises at least one of an alkalescent aqueous solution utilizing electrolytic ionized water, a trisodium phosphate solution, a tripotassium phosphate solution, and dilute ammonia water.

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15. A plating method comprising:
performing a steam treatment using steam on a surface of a substrate; and
bringing the surface of the substrate into contact with a plating solution after said steam treatment so as to form a plated film on the surface of the substrate.

16. The plating method as recited in claim 15, wherein the steam is generated from at least one of pure water and pure water to which a surface-active agent is added.

5 17. The plating method as recited in claim 15, further comprising bringing the surface of the substrate into contact with an acid liquid after said steam treatment before said plating process.

10 18. The plating method as recited in any one of claims 1 through 17, wherein the substrate has an organic resist film with a predetermined pattern formed in the organic resist film.

15 19. A substrate processing method comprising:
performing a steam treatment using steam on a surface of a substrate; and
performing a wet process on the surface of the substrate after said steam treatment.

20 20. A plating apparatus comprising:
an ultraviolet ray radiation chamber configured to apply an ultraviolet ray
to a surface of a substrate;
a plating chamber configured to plate the surface of the substrate to which the ultraviolet ray is applied; and
a frame housing at least said ultraviolet ray radiation chamber and said plating chamber.

25 21. The plating apparatus as recited in claim 20, further comprising an acid treatment chamber configured to bring the surface of the substrate to which the ultraviolet ray is applied into contact with an acid liquid, said acid treatment chamber being housed by said frame.

30 22. The plating apparatus as recited in claim 20, wherein said ultraviolet ray radiation chamber comprises at least one of an UV lamp, a low-pressure mercury lamp, an ArF excimer laser, and an excimer lamp with a dielectric barrier discharge.

23. A plating apparatus comprising:

an ozone gas exposure chamber configured to expose a surface of a substrate to an ozone gas;

5 a plating chamber configured to plate the surface of the substrate exposed to the ozone gas; and

a frame housing at least said ozone gas exposure chamber and said plating chamber.

24. The plating apparatus as recited in claim 23, further comprising an acid
10 treatment chamber configured to bring the surface of the substrate exposed to the ozone gas into contact with an acid liquid, said acid treatment chamber being housed by said frame.

25. The plating apparatus as recited in claim 23, wherein the ozone gas
15 includes ozone at a volume fraction of at least 10 %.

26. A plating apparatus comprising:

an ozone water process chamber configured to bring a surface of a substrate into contact with ozone water;

20 a plating chamber configured to plate the surface of the substrate brought into contact with the ozone water; and

a frame housing at least said ozone water process chamber and said plating chamber.

25 27. The plating apparatus as recited in claim 26, further comprising an acid treatment chamber configured to bring the surface of the substrate, brought into contact with the ozone water, into contact with an acid liquid, said acid treatment chamber being housed by said frame.

30 28. The plating apparatus as recited in claim 26, further comprising an ozone water generator configured to dissolve an ozone gas in pure water by diffusion and dissolution through an ozone dissolution membrane to generate the ozone water.

29. A plating apparatus comprising:
an electrolytic ionized water process chamber configured to bring a surface of a substrate into contact with electrolytic ionized water;
5 a plating chamber configured to plate the surface of the substrate brought into contact with the electrolytic ionized water; and
a frame housing at least said electrolytic ionized water process chamber and said plating chamber.
- 10 30. The plating apparatus as recited in claim 29, further comprising an acid treatment chamber configured to bring the surface of the substrate, brought into contact with the electrolytic ionized water, into contact with an acid liquid, said acid treatment chamber being housed by said frame.
- 15 31. The plating apparatus as recited in claim 29, further comprising an electrolytic ionized water generator configured to generate at least one of anodic water and cathodic water as the electrolytic ionized water by electrolysis of a solution containing at least one of pure water and an electrolyte.
- 20 32. A plating apparatus comprising:
a plating chamber configured to plate a surface of a substrate with an acidic plating solution;
a first cleaning chamber configured to clean the plated surface of the substrate with pure water;
25 a second cleaning chamber configured to clean the plated surface of the substrate with an alkalescent aqueous solution; and
a frame housing at least said plating chamber, said first cleaning chamber, and said second cleaning chamber.
- 30 33. The plating apparatus as recited in claim 32, wherein the alkalescent aqueous solution comprises at least one of an alkalescent aqueous solution utilizing electrolytic ionized water, a trisodium phosphate solution, a tripotassium phosphate solution, and dilute ammonia water.

34. A plating apparatus comprising:

a steam treatment chamber configured to perform a steam treatment using steam on a surface of a substrate;

5 a plating chamber configured to plate the surface of the substrate subjected to the steam treatment; and

a frame housing at least said steam treatment chamber and said plating chamber.

35. The plating apparatus as recited in claim 34, wherein the steam is
10 generated from at least one of pure water and pure water to which a surface-active agent is added.

36. The plating apparatus as recited in claim 34, further comprising an acid treatment chamber configured to bring the surface of the substrate subjected to the
15 steam treatment into contact with an acid liquid, said acid treatment chamber being housed by said frame.

37. The plating apparatus as recited in any one of claims 20 through 36, wherein said plating chamber is configured to electroplate the surface of the
20 substrate.

38. The plating apparatus as recited in claim 37, wherein said plating chamber comprises:

25 a plating tank holding a plating solution;
an anode disposed so as to face the substrate; and
a power source configured to apply a voltage between the substrate and the anode.

39. The plating apparatus as recited in any one of claims 20 through 36, further comprising:
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a transfer device operable to transfer the substrate, said transfer device being disposed in said frame; and

a loading/unloading chamber configured to load the substrate into said frame and unload the substrate from said frame.

40. The plating apparatus as recited in claim 39, wherein said transfer device is configured to hold and transfer the substrate in a horizontal state within said frame.

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41. The plating apparatus as recited in any one of claims 20 through 36, further comprising:

a dry station area defined in said frame;

10 a wet station area defined in said frame, said wet station area including at least said plating chamber;

a first transfer device operable to hold and transfer the substrate in a horizontal state within said dry station area; and

a second transfer device operable to hold and transfer the substrate in a vertical state within said wet station area.

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42. The plating apparatus as recited in claim 41, further comprising a partition wall separating said frame into said dry station area and said wet station area.

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43. The plating apparatus as recited in claim 41, wherein the substrate is held by a substrate holder and transferred together with said substrate holder within said wet station area.